

CLAIMS:

Claims 1-14 **(Cancelled)**.

15. **(Previously presented)** A plurality of carriers on which a plurality of different compounds can be synthesized, including a population of detectably distinct carriers each having a code, which distinctively identifies a respective carrier before, during and after said synthesis from other carriers, and which is characterized by at least two detectable and/or quantifiable attributes integrally associated with the carrier, wherein individual carriers comprise all the attributes that define a corresponding code before commencing synthesis of a respective compound thereon, and wherein the population of detectably distinct carriers constitutes at least about 70% of the plurality of carriers, wherein one of said attributes is not shape, or surface deformation(s) of the carrier.

16. **(Original)** The plurality of carriers of claim 15, wherein at least one of said attributes of a respective carrier is comprised within or internally of the carrier.

17. **(Original)** The plurality of carriers of claim 15, wherein at least one of said attributes of a respective carrier is an electromagnetic radiation-related attribute.

18. **(Original)** The plurality of carriers of claim 17, wherein the electromagnetic radiation-related attribute is selected from the group consisting of fluorescence emission, luminescence, phosphorescence, infrared radiation, electromagnetic scattering including light and X-ray scattering, light transmittance, light absorbance and electrical impedance.

19. **(Original)** The plurality of carriers of claim 17, wherein the electromagnetic radiation-related attribute is a light emitting, light transmitting or light absorbing attribute detectable by illuminating the carrier with incident light of one or more selected wavelengths or of one or more selected vectors.

20. **(Original)** The plurality of carriers of claim 15, wherein a respective carrier has at least three detectable and/or quantifiable attributes integrally associated therewith.
21. **(Original)** The plurality of carriers of claim 17, wherein the electromagnetic radiation-related attribute of a respective carrier comprises a fluorescent dye.
22. **(Original)** The plurality of carriers of claim 15, wherein each carrier is a colloidal particle.
23. **(Original)** The plurality of carriers of claim 15, wherein the carriers have different shapes selected from the group consisting of spheres, cubes, rectangular prisms, pyramids, cones, ovoids, sheets or cylinders.
24. **(Original)** The plurality of carriers of claim 15, wherein the carriers have different forms selected from the group consisting of pellet, disc, capillary, hollow fiber needle, pin and chip.
25. **(Original)** The plurality of carriers of claim 15, wherein the carriers have different sizes.
26. **(Original)** The plurality of carriers of claim 22, wherein the colloidal particle is a polymeric or ceramic particle.
27. **(Original)** The plurality of carriers of claim 26, wherein the ceramic particle is a silica particle.
28. **(Original)** The plurality of carriers of claim 26, wherein the carriers comprise ceramic particles with different diameters selected from about 0.01 μm to about 150 μm .

29. **(Original)** The plurality of carriers of claim 15, wherein a respective carrier comprises functionalities selected from the group consisting of -NH_2 , -COOH , -SOH , -SSH and sulfate.

Claims 30-62 **(Cancelled)**.